

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/21046

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : F02D 31/00, 41/06

US CL : 123/491,352

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 123/ 2, 491, 352, 685, 686, 687; 290/51

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| Y | US 2002/0078922 A1(MIZUKI) 27 June 2002 (27.06.2002), See entire document. | 1-20 |
| Y | US 2002/0011238 A1 (YOMOGIDA) 21 January 2002 (31.01.2002), See entire document. | 1-20 |
| Y | US 5,199,400 A (SPRENGER et al) 06 April 1993 (06.04.1993), See entire document. | 1-20 |
| Y | US 5,890,467 A (ROMZEK) 06 April 1999 (06.04.1999), See entire document. | 1-20 |
| Y | US 6,196,190 B1 (PRZYMUSINSKI et al) 06 March 2001 (06.03.2001), See entire document. | 1-20 |
| Y | US 6,145,486 A (AIKAWA) 14 November 2000 (14.11.2000), See entire document. | 1-20 |
| Y | US 4,964,386 A (AKIYAMA et al) 23 October 1990 (23.10.1990), See entire document. | 1-20 |
| Y,P | 2003/0019472 A1 (KONNO) 30 January 2003 (30.01.2003), See entire document. | 1-20 |
| Y,P | US 6,467,458 B1 (SUZUKI et al) 22 October 2002 (22.10.2002), See entire document. | 1-20 |



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"I" earlier application or patent published on or after the international filing date

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later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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document member of the same patent family

Date of the actual completion of the international search

28 February 2004 (28.02.2004)

Date of mailing of the international search report

22 APR 2004

Name and mailing address of the ISA/US

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INTERNATIONAL SEARCH REPORT

PCT/US03/21046

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| Y | US 4,625,123 A (GILLET et al) 25 November 1986 (25.11.1986), See entire document. | 1-20 |